Global Nexus Institute
Innovation & Excellence

Data Science Bootcamp Course Outline

Course Overview

Our 24 Week **Data Science Bootcamp** program is designed to deepen your skills and expertise. Each module combines theory with hands-on practice, covering advanced topics and industry-relevant tools. You will gain practical experience through real-world datasets and integrate your learning into a final project, preparing you for success in the data analytics field. This program is ideal for those looking to master data analysis , machine learning and advance their careers.

Course Modules

Module 1: Foundations of Data Analysis

Duration: 1 week

Objective: Build a strong foundational understanding of data analytics.

Topics:

- Intro to the data analytics lifecycle: Collection, cleaning, analysis, and reporting.
- Types of data: Structured, semi-structured, and unstructured.
- Overview of tools and technologies: Python, Excel, SQL, Tableau, and Power BI.
- Case studies of real-world data analytics applications.

Outcomes: Students gain clarity on the field and their learning goals.

Module 2 : Statistics for Aspiring Data Analysts

Duration: 3 weeks

Objective: Equip aspiring data analysts with a solid foundation in statistical concepts, methods, and tools to effectively collect, analyze, and interpret data.

Topics:

- Introduction to statistics
- Data collection and sampling
- Data visualization and descriptive statistics
- Probability and distributions
- Hypothesis testing and inferential statistics
- Correlation and regression analysis

Outcomes: By the end of this course, participants will confidently apply statistical techniques to analyze data, draw insights, and support data-driven decision-making

Module 3: Introduction to Python Programming

Duration: 3 weeks

Objective: Learn Python fundamentals for data analysis.

Topics:

- Python installation and environment setup (Anaconda, Jupyter Notebook).
- Python basics: Variables, data types, and operators.
- Control structures: Loops (for, while) and conditional statements (if-else).
- Functions: Writing reusable code.
- Working with files: Reading and writing CSV/Excel files.
- Introduction to Python libraries for data: pandas and numpy.

Outcomes: Ability to write Python scripts for basic data handling.

Module 4: Advanced Excel for Data Analysis

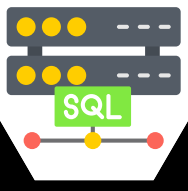
Duration: 2 weeks

Objective: Master Excel for cleaning, analyzing, and visualizing data.

Topics:

- Advanced functions: VLOOKUP, HLOOKUP, and conditional formatting.
- Data cleaning: Removing duplicates, handling blanks, and splitting data.
- PivotTables and PivotCharts for summarization and visualization.
- Power Query for data transformation.

Outcomes: Confidence in handling complex datasets with Excel.



Module 5: MySQL for Database Management

Duration: 2 weeks

Objective: Learn SQL for querying and managing databases.

Topics:

- Relational database fundamentals.
- Writing basic SQL queries: SELECT, WHERE, GROUP BY, ORDER BY.
- Advanced SQL: JOINS, subqueries, and CTEs.
- Database design and normalization.
- Practical exercises with MySQL Workbench.

Outcomes: Ability to manage and query large-scale databases

Module 6: Python for Data Cleaning and Analysis

Duration: 2 weeks

Objective: Use Python libraries for data cleaning and exploratory analysis.

Topics:

- Pandas: Data manipulation techniques.
- Handling missing data and outliers.
- Data aggregation and grouping, and EDA
- Visualizing data with matplotlib and seaborn.
- Automating repetitive tasks with Python scripts.

Outcomes: Proficiency in cleaning and analyzing data programmatically.

Module 7: Data Visualization with Power BI

Duration: 3 weeks

Objective: Master Power BI for storytelling with data.

Topics:

- Power BI basics: Connecting to data and creating visuals.
- Designing charts: Bar graphs, scatter plots, maps.
- Creating dashboards and applying filters.
- Storytelling with Power BI dashboards.
- Advanced techniques: Parameters and calculated fields.

Outcomes: Ability to create compelling data dashboards.

Module 8: Advanced Topics in Data Analytics

Duration: 2 weeks

Objective: Ability to create compelling data dashboards.

Topics:

- Combining tools: Integrating Excel, SQL, and Python workflows.
- Handling large datasets and optimizing performance.
- Data ethics and compliance (e.g., GDPR).
- Predictive analytics basics: Introduction to machine learning.

Outcomes: Understanding of advanced analytics and ethical practices.

Module 9: Supervied Maching Learning

Duration: 3 weeks

Objective: Master the basics of supervised learning and predictive modeling.

Topics:

- Labeled data, regression, and classification.
- Algorithms: Linear Regression, Logistic Regression, Decision Trees.
- Model evaluation and Python implementation.

Outcomes: Build, evaluate, and apply machine learning models.

Module 10: Usupervied Maching Learning

Duration: 1 week

Objective: Understand and apply techniques to analyze unlabeled data.

Topics:

- Clustering (K-Means, Hierarchical) and dimensionality reduction (PCA).
- Applications: Customer segmentation, anomaly detection.

Outcomes: Ability to uncover patterns and insights from raw data.

Module 9: Capstone Project

Duration: 2 weeks

Objective: Apply all learned skills to a real-world project.

Requirements:

- Dataset selection, cleaning, and preparation using Python and SQL
- Visualizing and analyzing data with Tableau and Power BI.
- Machine Learning Project

Deliverables:

- Interactive dashboards.
- A presentation showcasing insights and recommendations.

Assessment and Certification

Weeky Assessments

Quizzes, assignments, and mini-projects.

Mid-Course Evaluation

Hands-on assessments in Python and SQL

Final Evaluation

Capstone project grading (analysis, visualization, presentation).

Certification

IoA-Endorsed Certificate or equivalent upon successful completion.

This 24-week program ensures a gradual build-up of skills, with ample time for practice and mastery.

Tools For Data Scientist

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